Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claims 1-38 (Cancelled).

39. (Previously Presented) A device, comprising:

a cantilever;

a metal thin film piezoresistor located on the cantilever; and

a detector which is adapted to measure a resistance change in the piezoresistor in response to a force applied to the cantilever;

wherein:

the cantilever comprises a biofunctionalized cantilever;

the metal thin film piezoresistor is located adjacent to a base of the cantilever; and

the detector is adapted to detect binding of a biological analyte to the cantilever.

40. (Previously Presented) The device of claim 39 wherein the cantilever comprises a notched nanocantilever and the metal thin film piezoresistor is located on arm portions of the nanocantilever adjacent to the notch.

41. (Cancelled)

42. (Previously Presented) The device of claim 39 wherein the detector is adapted to detect binding of the biological analyte to the cantilever from a measurement of the resistance change in the piezoresistor.

43. (Previously Presented) The device of claim 39 wherein the cantilever comprises an inorganic material cantilever.

44. (Previously Presented) The device of claim 43 wherein the cantilever comprises an insulating inorganic cantilever.

45. (Previously Presented) The device of claim 44 wherein the cantilever comprises a silicon nitride, a silicon oxynitride or a silicon oxide cantilever.

46. (Previously Presented) The device of claim 39 wherein the cantilever comprises a semiconductor cantilever.

47. (Previously Presented) The device of claim 39 wherein the metal thin film comprises a pure metal composition selected from the group consisting of Au, Cr, Ag, Pd, Ni, Pt, or Mn, or alloys selected from the group consisting of Au-Ni, NiCr, Bi-Sb, Ag-Ni, Cu-Ni, or Pt-Cr.

48. (Previously Presented) The device of claim 39 wherein the thin metal film is located on a surface of the cantilever.

49. (Previously Presented) The device of claim 39 where the thin metal film comprises a film with a thickness on the order of tens of angstroms or less.

50. (Previously Presented) A measurement method, comprising:

providing a cantilever and a metal thin film piezoresistor located on the cantilever;

stressing the cantilever with a force having a transverse component; and

measuring a resistance change in the piezoresistor in response to the transverse component of the force applied to the cantilever;

wherein:

the cantilever comprises a biofunctionalized cantilever;

the metal thin film piezoresistor is located adjacent to a base of the cantilever; and

the step of stressing the cantilever comprises providing a biological analyte to the cantilever.

51. (Cancelled)

52. (Previously Presented) The method of claim 50 further comprising detecting binding of the biological analyte to the cantilever from the step of measuring the resistance change.

53. (Previously Presented) The method of claim 50 wherein the cantilever comprises an inorganic material cantilever.

54. (Previously Presented) The method of claim 53 wherein the cantilever comprises an insulating inorganic cantilever.

55. (Previously Presented) The method of claim 54 wherein the cantilever comprises a silicon nitride, a silicon oxynitride or a silicon oxide cantilever.

56. (Previously Presented) The method of claim 50 wherein the cantilever comprises a semiconductor cantilever.

57. (Previously Presented) The method of claim 50 wherein the metal thin film comprises a pure metal composition selected from the group consisting of Au, Cr, Ag, Pd, Ni, Pt, or Mn, or alloys selected from the group consisting of Au-Ni, NiCr, Bi-Sb, Ag-Ni, Cu-Ni, or Pt-Cr.

58. (Previously Presented) The method of claim 50 wherein the thin metal film is located on a surface of the cantilever.

59. (Previously Presented) The method of claim 50 where the thin metal film comprises a film with a thickness on the order of tens of angstroms or less.

60. (Previously Presented) The method of claim 50 wherein the cantilever comprises a notched nanocantilever and the metal thin film piezoresistor is located on arm portions of the nanocantilever adjacent to the notch.

61. (Previously Presented) The method of claim 50 wherein the step of measuring the resistance change comprises measuring the resistance change dynamically over time to detect a dynamic motion of the cantilever as a function of time.

62. (Previously Presented) The method of claim 61 further comprising detecting binding of the biological analyte to the cantilever from the step of measuring the resistance change by using a resonant frequency of the cantilever.

63. (Previously Presented) The method of claim 50 further comprising obtaining a frequency spectrum of the cantilever.

64. (Previously Presented) The device of claim 39 wherein the detector is adapted to measure the resistance change dynamically over time to detect a dynamic motion of the cantilever as a function of time.

65. (Previously Presented) The device of claim 64 wherein the detector is adapted to detect binding of the biological analyte to the cantilever from a measurement of the resistance change in the piezoresistor by using a resonant frequency of the cantilever.

66. (Previously Presented) The device of claim 39 wherein the detector is adapted to obtain a frequency spectrum of the cantilever.